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[54]名 稱：具六軸能力之週邊輸入裝置
[21]申請案號： 084105522 [22]申請日期：中華民國 84年 (1995) 05月31日
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[74]代理人： 惲軼群 先生
康儀言 先生

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[57]申請專利範圍：

1.一種配合允許六軸輸入之遊戲控制台使用的週邊輸入裝置，其包含有：

a)兩組獨立三軸輸入裝置；

b)一組具有微處理器之控制座，其具有用以在該兩組三軸輸入裝置和該控制座之間建立電氣連接之兩組輸入埠並且具有用以在該控制座微處理器和該遊戲控制台之間建立電氣連接之一組輸出埠；

c)用以決定該兩組三軸輸入裝置之一組或兩組連接至控制座輸入埠之控制座微處理器，

其中該控制座微處理器決定兩組輸入埠是否連接至三軸輸入裝置，並且依據決定的結果，經由控制座輸出埠輸出一組位址信號至遊戲控制台而指示遊戲控制台有一組或兩組三軸輸入裝置連接至控制座輸入埠。

2.一種三軸搖桿控制器，其包含有：

a)具有一近端和一消端之細長搖桿組件；

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b)一組用以接納搖桿組件之近端的搖桿底座，其具有大致垂直於搖桿組件之縱軸的兩個大致平坦感測器表面，具有反射塗層的第一表面背向搖桿組件；

c)一組具有一近端和一遠端之X-Y軸彈簧拉力組件，其與搖桿組件之縱軸大致同軸地裝設在搖桿組件內並且在近端處固定於搖桿底座以便在使用者施加X軸和Y軸力量於搖桿組件之後提供將搖桿組件返回中央位置之力量；

d)平行於搖桿底座之第一表面且在其下方之X-Y軸感測器表面；

e)至少一組X-Y軸光源和X-Y軸光信號檢出感測器裝設在感測器表面上，其中搖桿組件的X-Y位置和運動被搖桿底座的第一表面所反射的光信號所決定；

f)X-Y軸光信號處理電路，其將來自感測器表面光信號檢出感測器之光信號轉換成為在電腦遊戲控制中有用的X-Y位置資料信號；以及，

g)一組靠近搖桿組件遠端而用於Z軸控制的姆指操作旋轉器組件，其包含有：

(1)一組具有與使用者姆指互動之半圓盤的旋轉器且其具有至少一反射表面垂直於盤面而裝設，且該反射表面背向半圓盤，該半圓盤可對其中心選擇地轉動；

(2)一組在旋轉器之任一方向轉動之後將其返回其中央位置之彈簧拉力組件；

(3)一組平行於旋轉器之反射表面且在其下方之Z軸感測器表面；

(4)至少一組裝設在Z軸感測器表面上的Z軸光源和Z軸光信號檢出感測器，其中旋轉器的Z位置和運動被旋轉器的反射表面所反射的光信號所決定；以及，

(5)一組Z軸光信號處理電路，其將來自Z軸感測器表面光信號檢出感測器的光信號轉換為在電腦遊戲控制中有用的Z軸位置資料信號。

3.一種靠近搖桿組件遠端而用於Z軸控制的姆指操作旋轉器組件，其包含有：

a)一組具有與使用者姆指互動之半圓盤的旋轉器且其具有至少一反射表面垂直於盤面而裝設，且該反射表面背向半圓盤，該半圓盤可對其中心選擇地轉動；

b)一組在旋轉器之任一方向轉動之後將其返回其中央位置之彈簧拉力組件；

c)一組平行於旋轉器之反射表面且在其下方之Z軸感測器表面；



d)至少一組裝設在Z軸感測器表面上的Z軸光源和Z軸光信號檢出感測器，其中旋轉器的Z位置和運動被旋轉器的反射表面所反射的光信號所決定；以及，

e)一組Z軸光信號處理電路，其將來自Z軸感測器表面光信號檢出感測器的光信號轉換為在電腦遊戲控制中有用的Z軸位置資料信號。

圖式簡單說明：

第一圖是本發明的三軸搖桿透視圖。

第二圖是本發明的三軸搖桿之感測器之底座和搖桿底座之平面圖。

第三圖是沿第二圖中線段2-2'，搖桿底座，感測器表面和搖桿組件之截面圖。

第四圖A是本發明之運動檢測器電路的概示圖，第四圖B示出第四圖A電路所生成之波形。

第五圖A是本發明的RDIA電路之概示圖，第五圖B示出對應於不同偏移度之波形。

第六圖是Z軸旋轉器組件之透視圖。

第七圖是Z軸旋轉器組件之另一透視圖。

第八圖A-C包含Z軸旋轉器之三種不同透視圖。

第九圖是Z軸彈性固持器之透視圖。

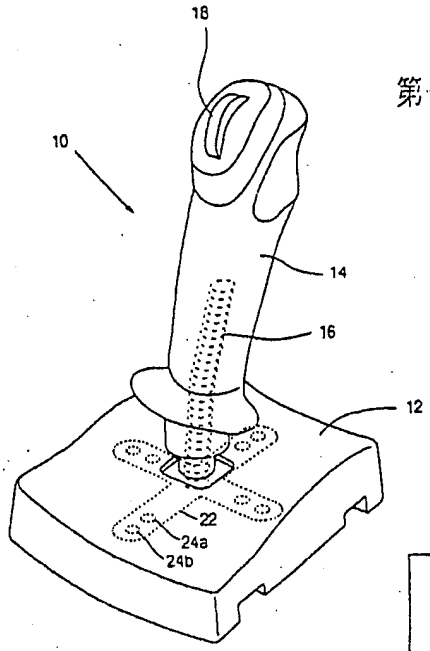
第十圖是具有Z軸旋轉器組件之搖桿的截面圖。

第十一圖是連接於控制座的兩組三軸搖桿之透視圖。

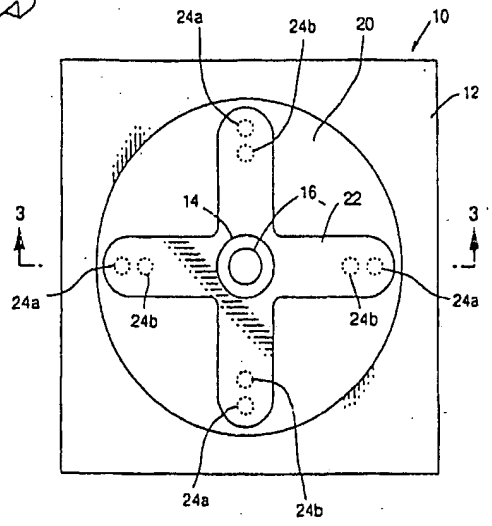
第十二圖是控制度之透視圖。

第十三圖是包含一組控制座和兩組三軸搖桿的週邊輸入裝置之流程圖。

第十四圖是控制座電路的概示圖。




第一圖

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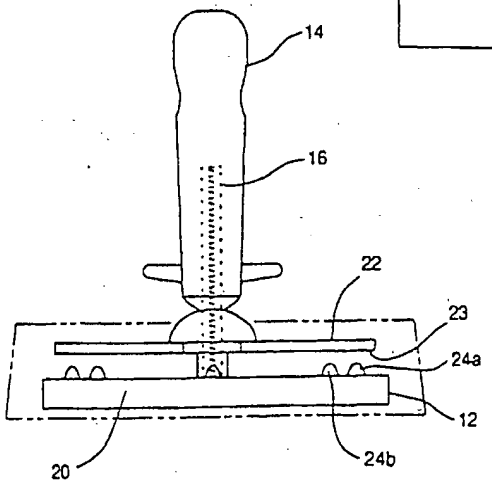


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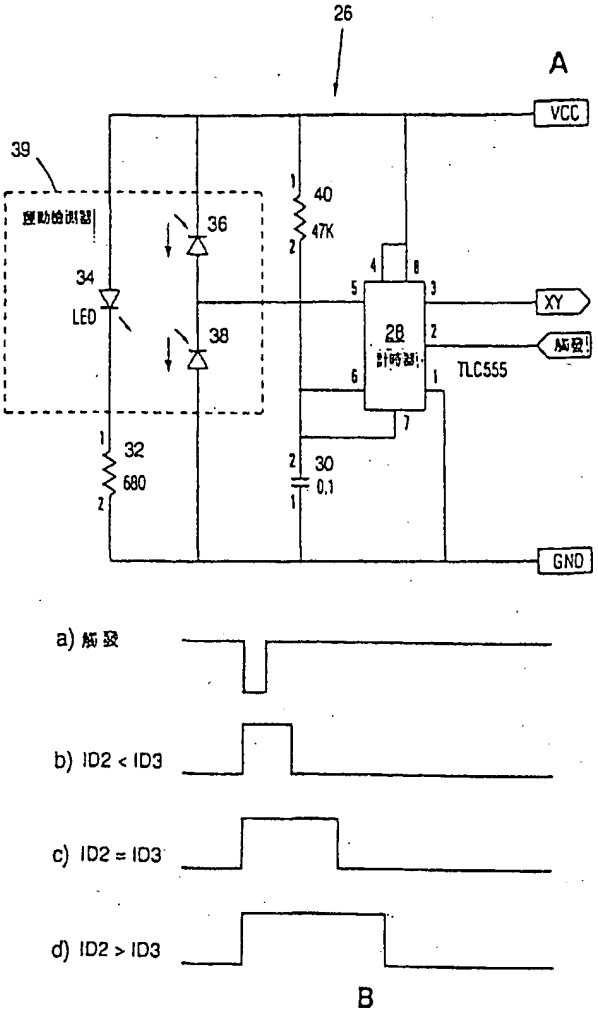
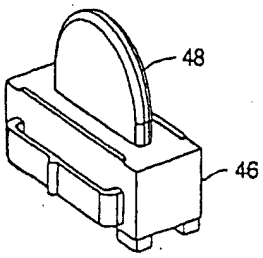
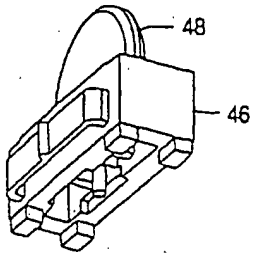


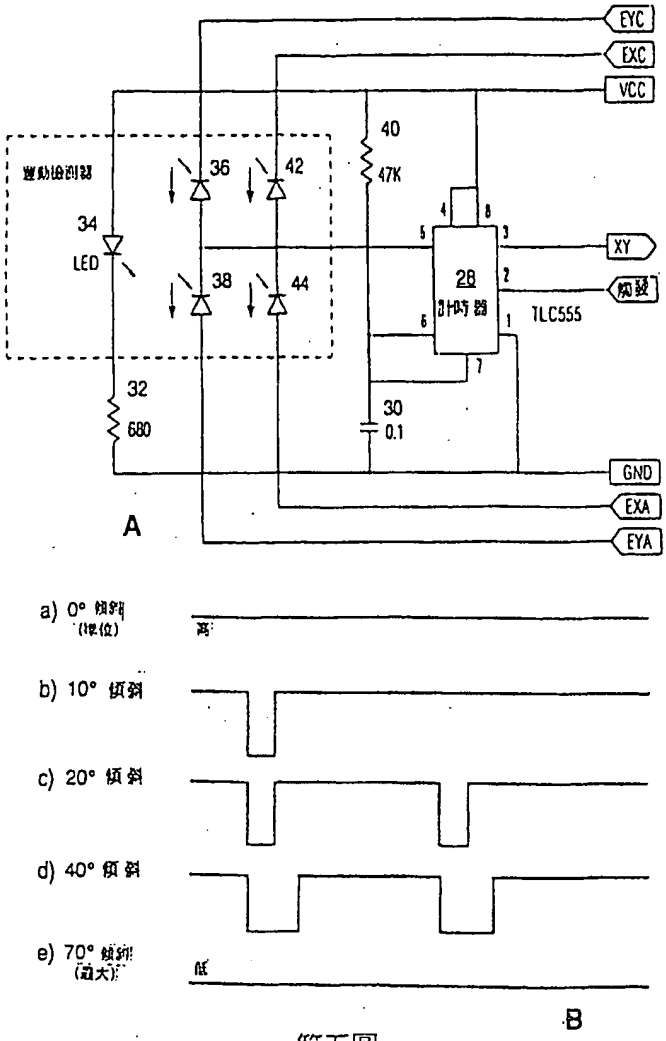

第四圖




第六圖




第七圖

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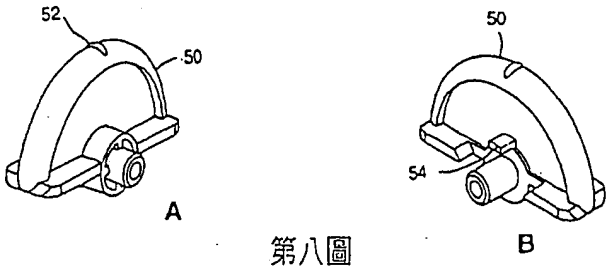


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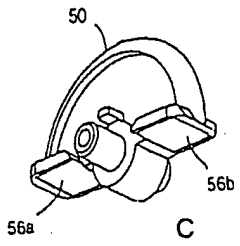
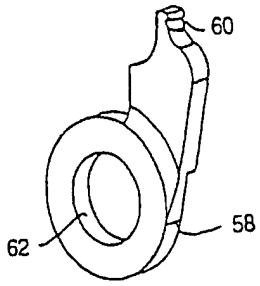
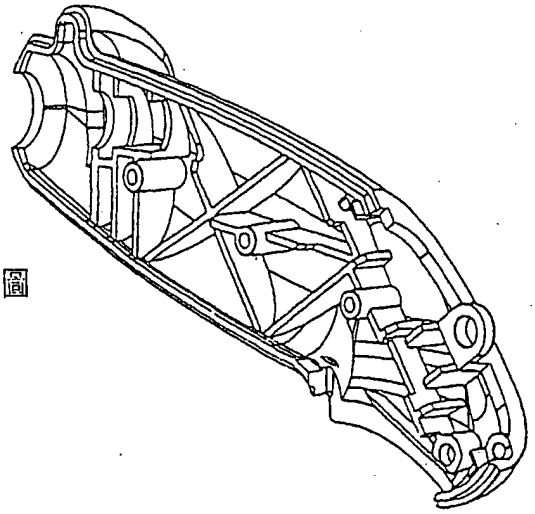


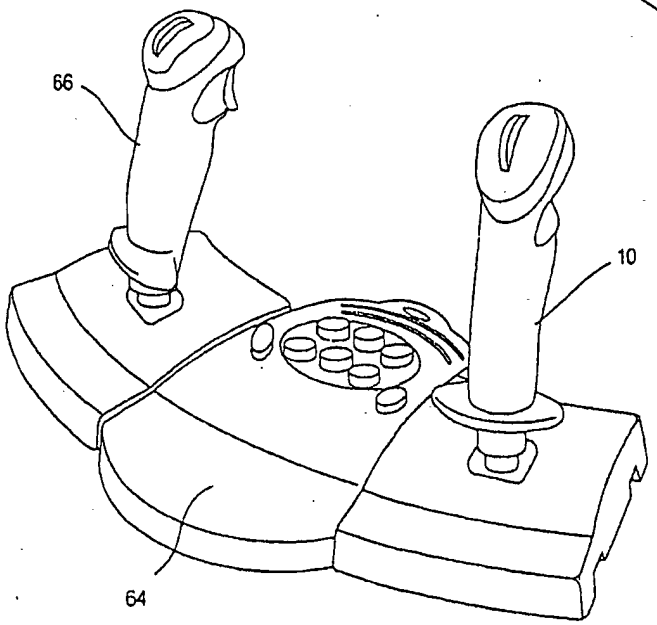

第八圖



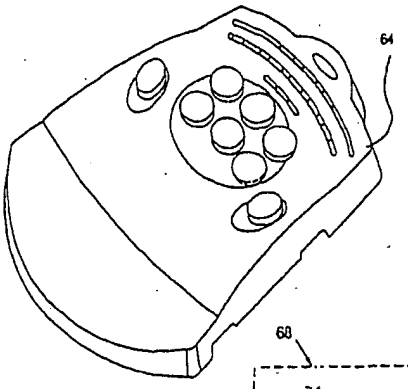

第九圖



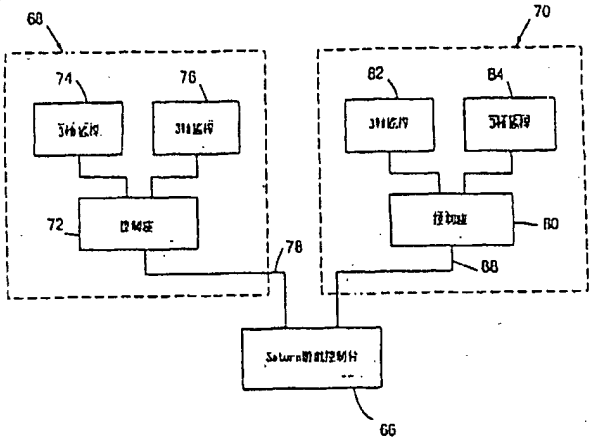
第十圖



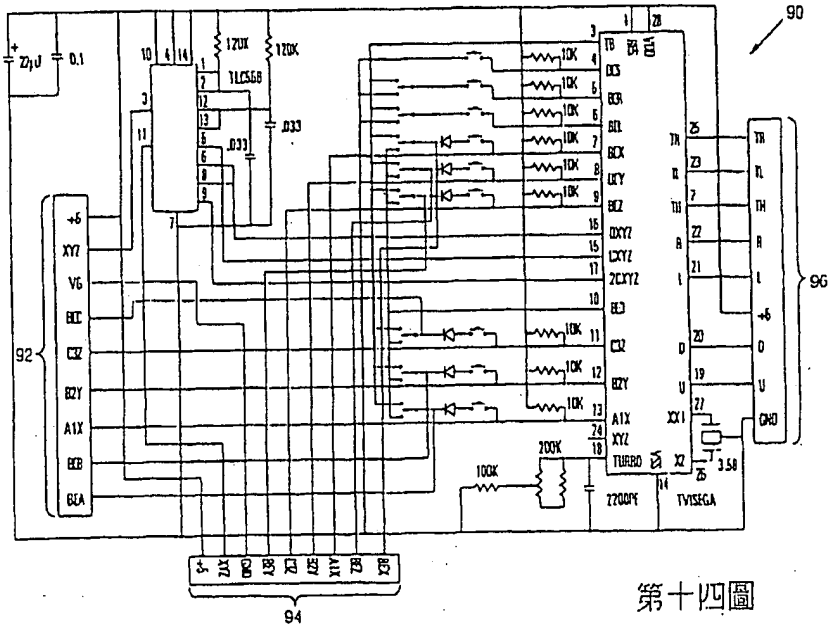

第十一圖




第十二圖




第十三圖




第十四圖

We claim:

1. Peripheral input device for use with a game console allowing six-axis input which comprises:

a) two independent three-axis input devices;

b) a control pad with a microprocessor, with two input ports for establishing an electrical connection between the two three-axis input devices and the control pad and with an output port for establishing an electrical connection between a control pad microprocessor and the game console;

c) control pad microprocessor for determining whether one or two of the two three-axis input devices are connected to the control pad input ports wherein the control pad microprocessor determines whether the two input ports are connected to three-axis input devices and, based upon the results of the determination, outputs an address signal to the game console through the control pad output port which indicates to the game console whether one or two three-axis input devices are connected to the control pad input ports.

2. A three-axis joystick controller comprising:

a) an elongate joystick member having a proximal end and a distal end;

b) a joystick base adapted to receive the proximal end of the joystick member, having two substantially planar sensor surfaces substantially perpendicular to the longitudinal axis of the joystick member, the first surface having reflective coating facing away from the joystick member;

c) x-y axes spring tension member having a proximal end and a distal end, mounted within the joystick member substantially coaxial with the longitudinal axis of the joystick member and fixed to the joystick base at the proximal end to provide force to return the joystick member to center after x-axis and y-axis forces have been applied to the joystick member by the user;

d) x-y axes sensor surface positioned below parallel to the first surface of the joystick base;

e) at least one x-y axes light source and x-y axes optical signal detection sensors mounted on the sensor surface wherein the x-y position and motion of the joystick member are determined by the optical signals reflected by the first surface of the joystick base;

f) x-y axes optical signal processing circuit which converts the optical signals from the sensor surface optical signal detection sensors into x-y positional data signals useful in the control of computer games; and,

g) a thumb-operated rotor assembly positioned near the distal end of the joystick member for z-axis control having:

(1) a rotor with a semicircular disk for interaction with the user's thumb and having at least one reflective surface mounted perpendicular to the plane of the disk, and the reflective surface facing away from the disk, the disk being selectably rotatable about its center;

(2) a spring tension member for returning the rotor to its center position after rotation in either direction;

(3) a z-axis sensor surface positioned below and parallel to the reflective surface of the rotor;

(4) at least one z-axis light source and z-axis optical signal detection sensor mounted on the z-axis sensor surface wherein the z position and motion of the rotor are determined by the optical signals reflected by the reflective surface of the rotor; and,

(5) a z-axis optical signal processing circuit which converts the optical signals from the z-axis sensor surface optical signal detection sensor into z-axis positional data signals useful in the control of computer games.

3. A thumb-operated rotor assembly positioned near the distal end of a joystick member for z-axis control comprising :

a) a rotor with a semicircular disk for interaction with the user's thumb and having at least one reflective surface mounted perpendicular to the plane of the disk, and the reflective surface facing away from the disk, the disk being selectably rotatable about its center;

b) a spring tension member for returning the rotor to its center position after rotation in either direction;

c) a z-axis sensor surface positioned below and parallel to the reflective surface of the rotor;

d) at least one z-axis light source and z-axis optical signal detection sensor mounted on the z-axis sensor surface wherein the z position and motion of the rotor are determined by the optical signals reflected by the reflective surface of the rotor; and,

e) a z-axis optical signal processing circuit which converts the optical signals from the z-axis sensor surface optical signal detection sensor into z-axis positional data signals useful in the control of computer games.

## ABSTRACT OF THE DISCLOSURE

A control pad with two input ports for establishing a connection with two three-axis input devices permits six-axis game play. The control pad contains a microprocessor which determines whether one or two three-axis input devices are connected and generates an address signal for communication with the game console to inform the console microprocessor on power up the exact nature of the peripheral input devices which are attached. The present invention also includes a thumb-operable rotor assembly which allows single-handed three axis control of computer games.

REVISED DRAWI

補正
補充

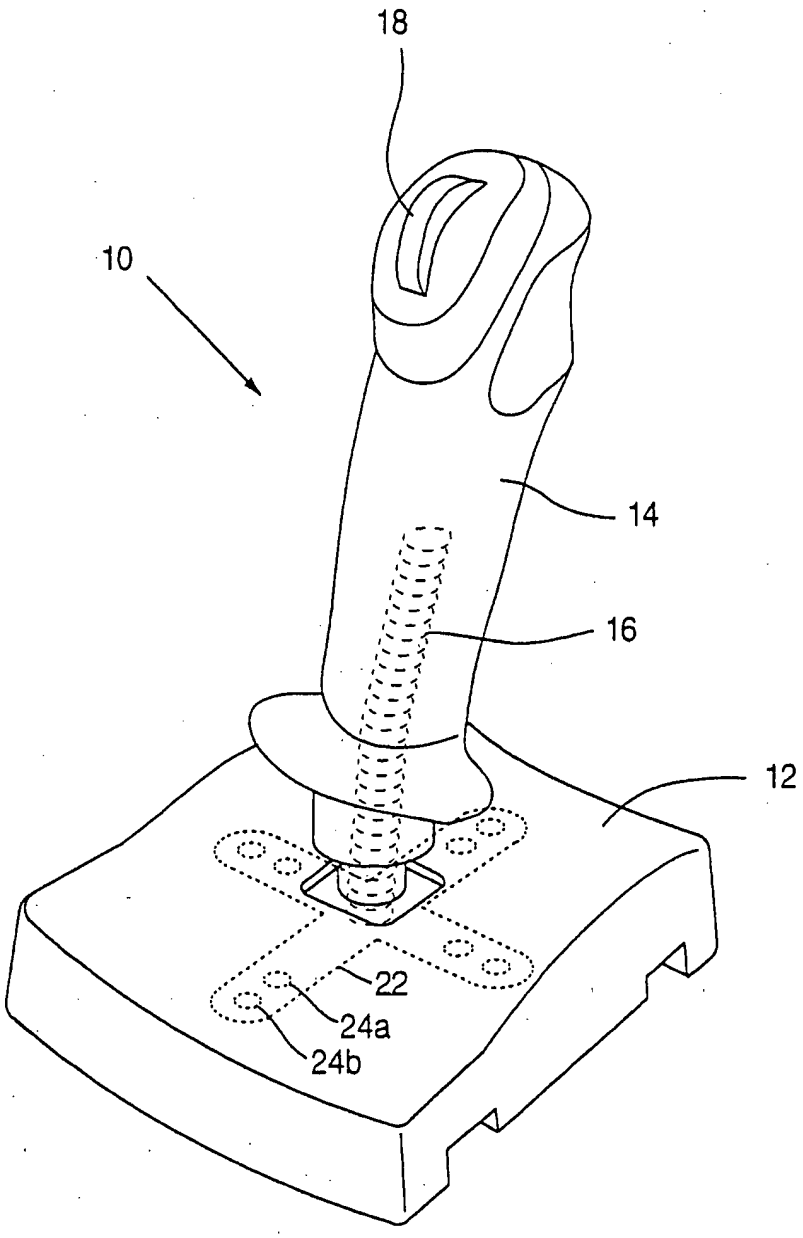



FIG. 1

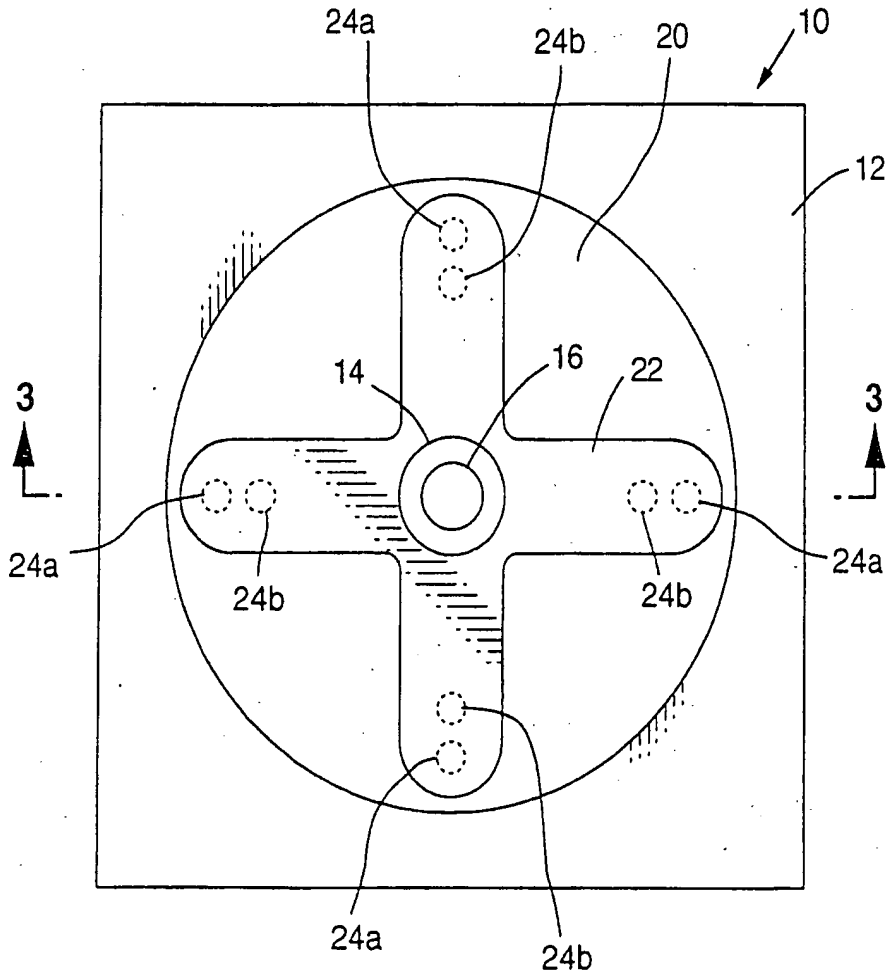



FIG. 2

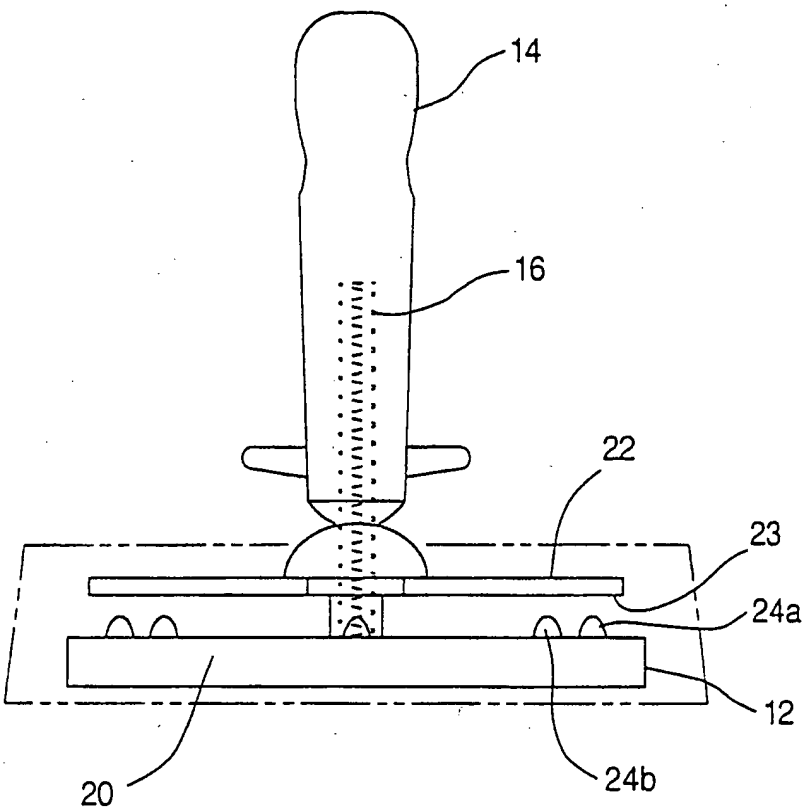



FIG. 3

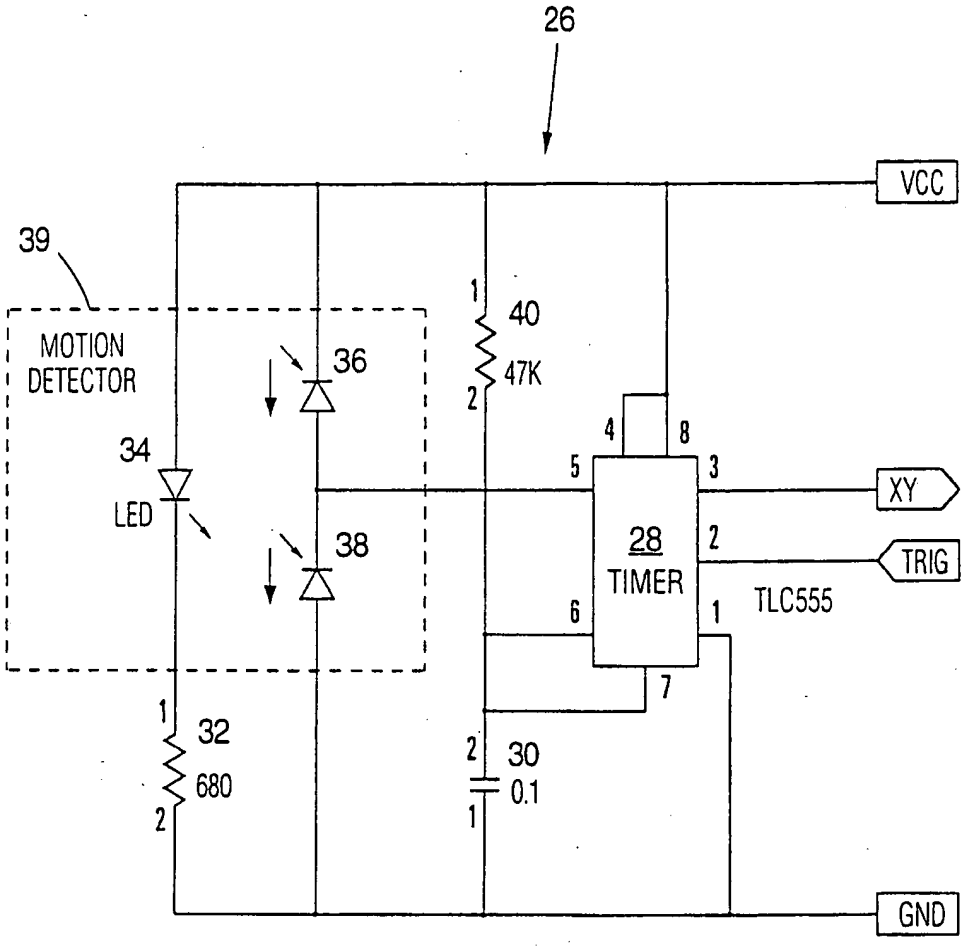

26
VCC
39
MOTION
DETECTOR
36
34
LED
38
1
40
47K
2
4
8
5
3
XY
28
TIMER
2
TRIG
6
1
TLC555
7
1
32
680
2
2
30
0.1
1
GND

FIG. 4A

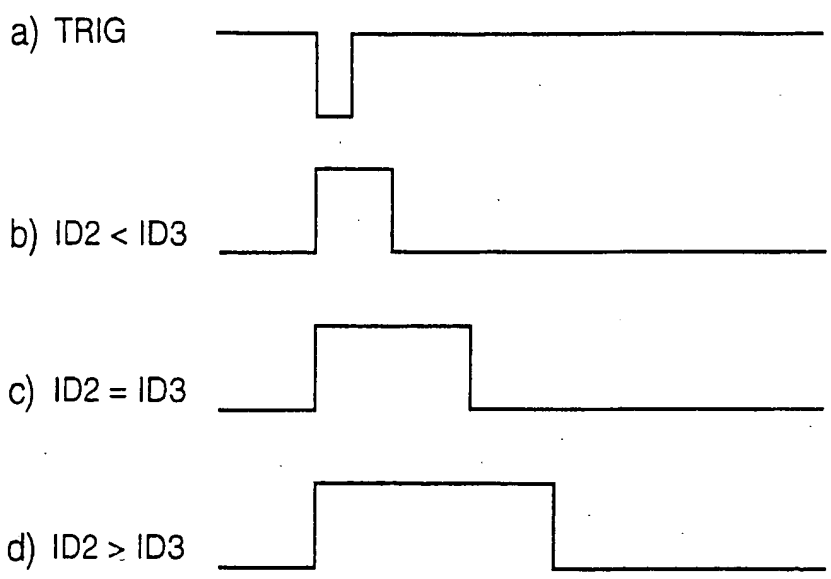



FIG. 4B

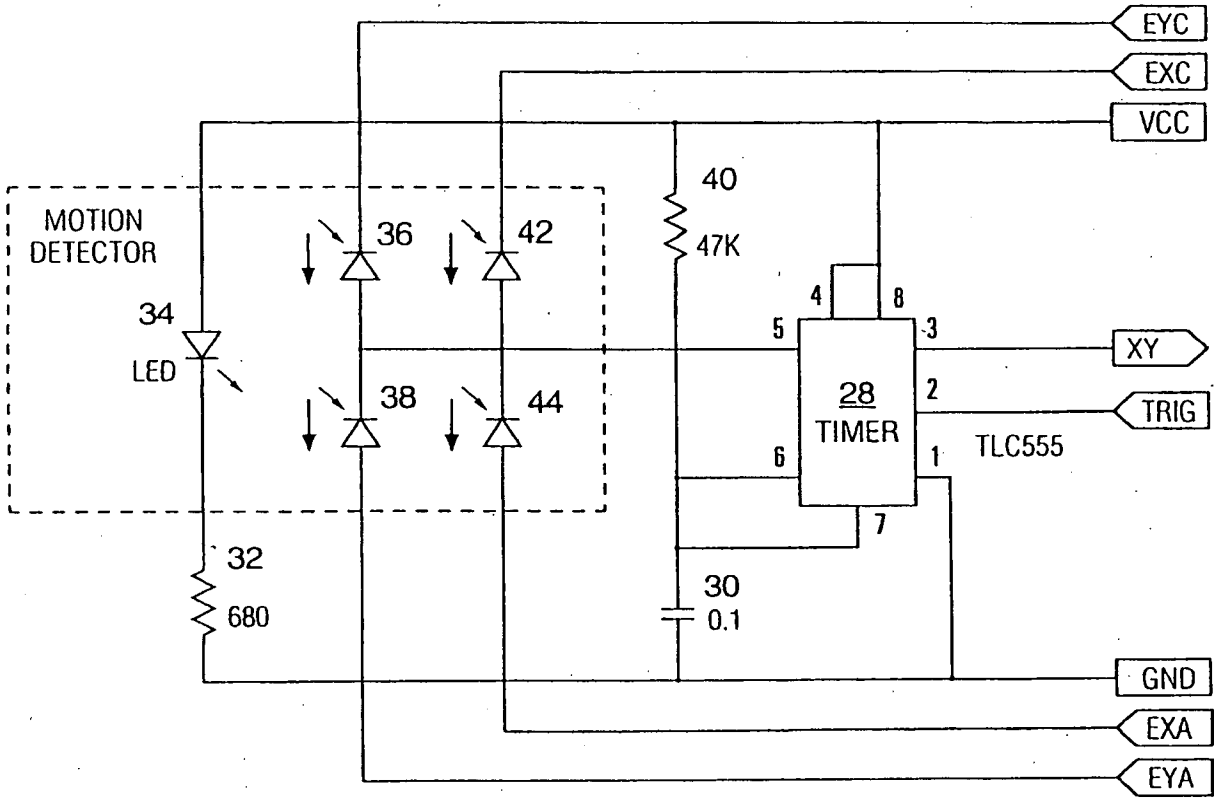

EYC
EXC
VCC
MOTION
DETECTOR
36
42
40
47K
34
LED
38
44
4
8
5
3
XY
28
TIMER
2
TRIG
TLC555
6
1
7
32
680
30
0.1
GND
EXA
EYA

FIG. 5A

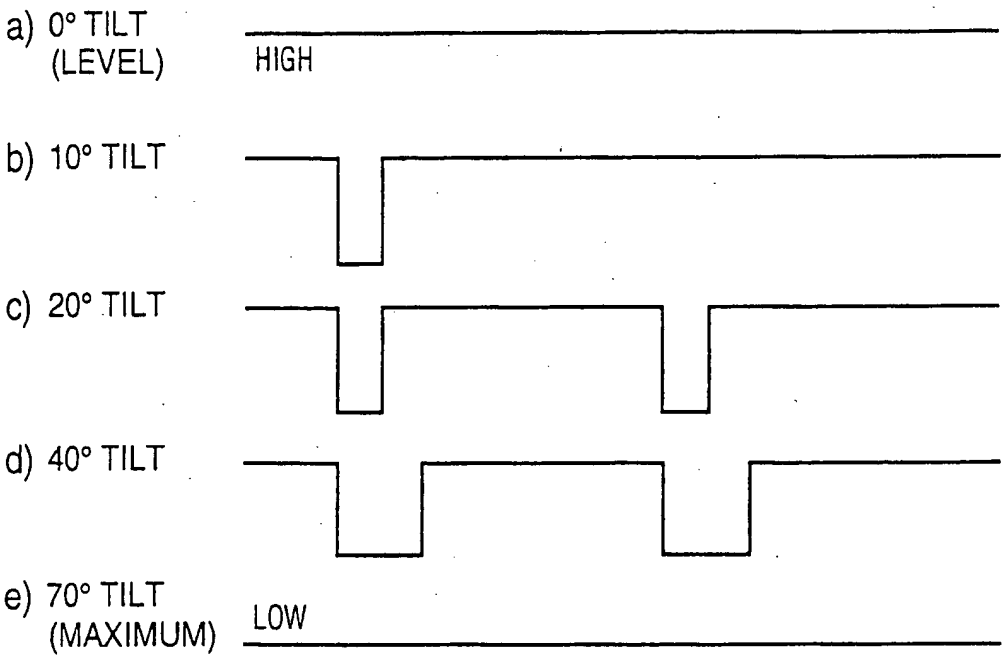

a) 0° TILT
(LEVEL)
HIGH
b) 10° TILT
c) 20° TILT
d) 40° TILT
e) 70° TILT
(MAXIMUM)
LOW

FIG. 5B

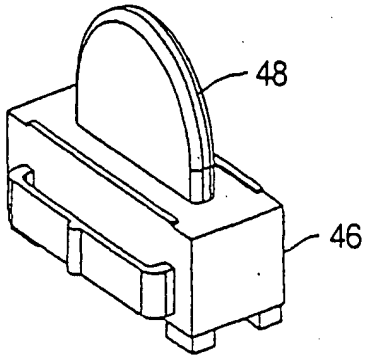



FIG. 6

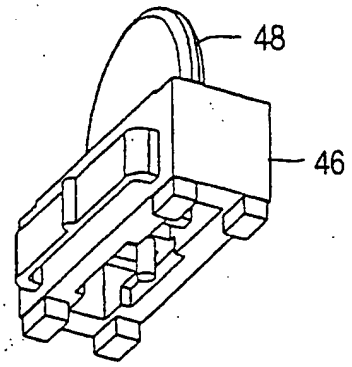



FIG. 7

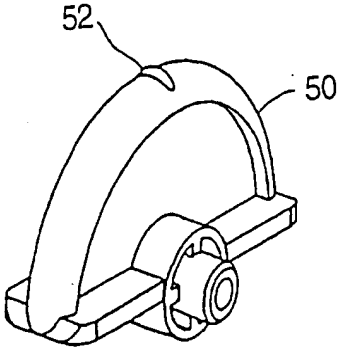



FIG. 8A

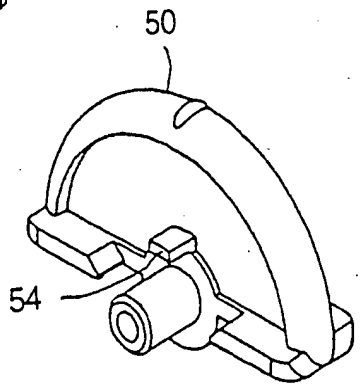



FIG. 8B

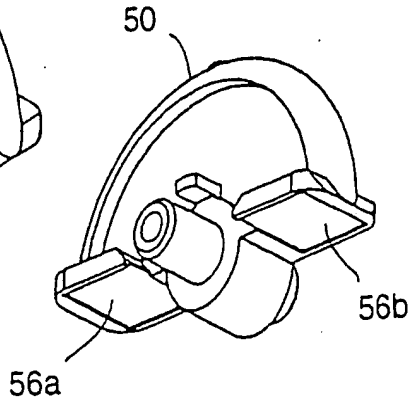



FIG. 8C

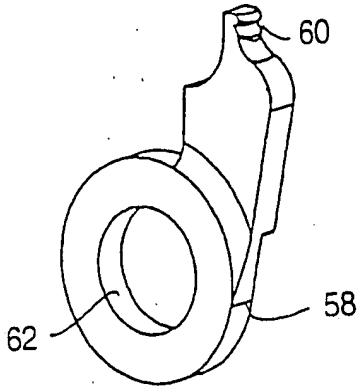



FIG. 9

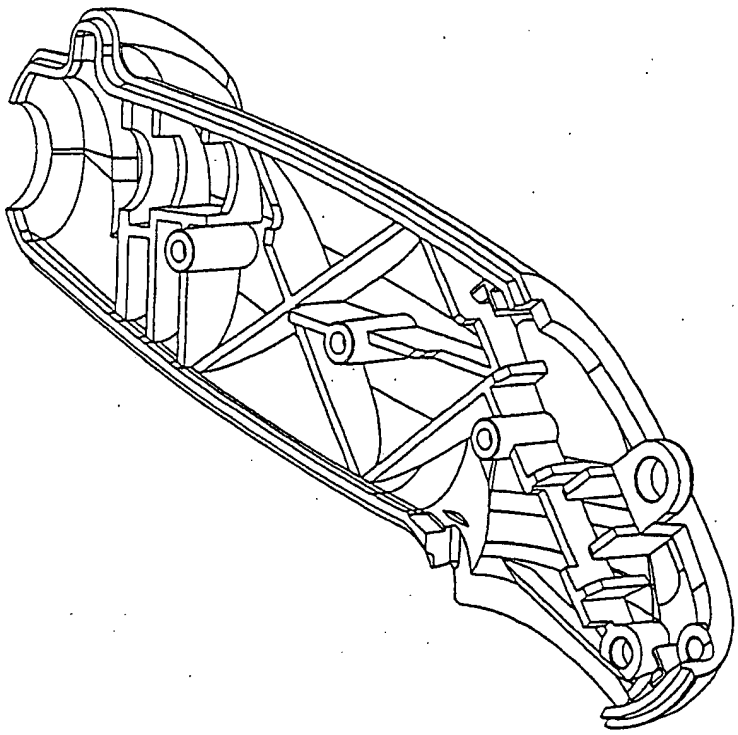


FIG. 10

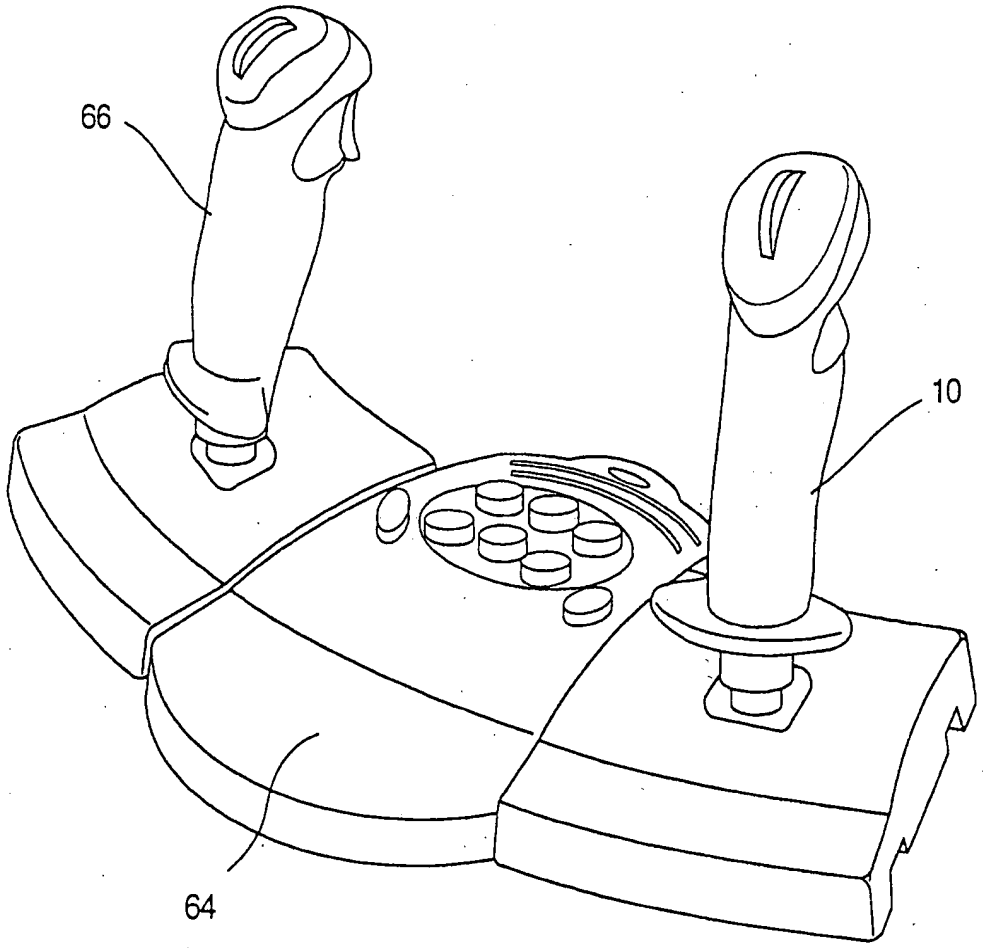



FIG. 11

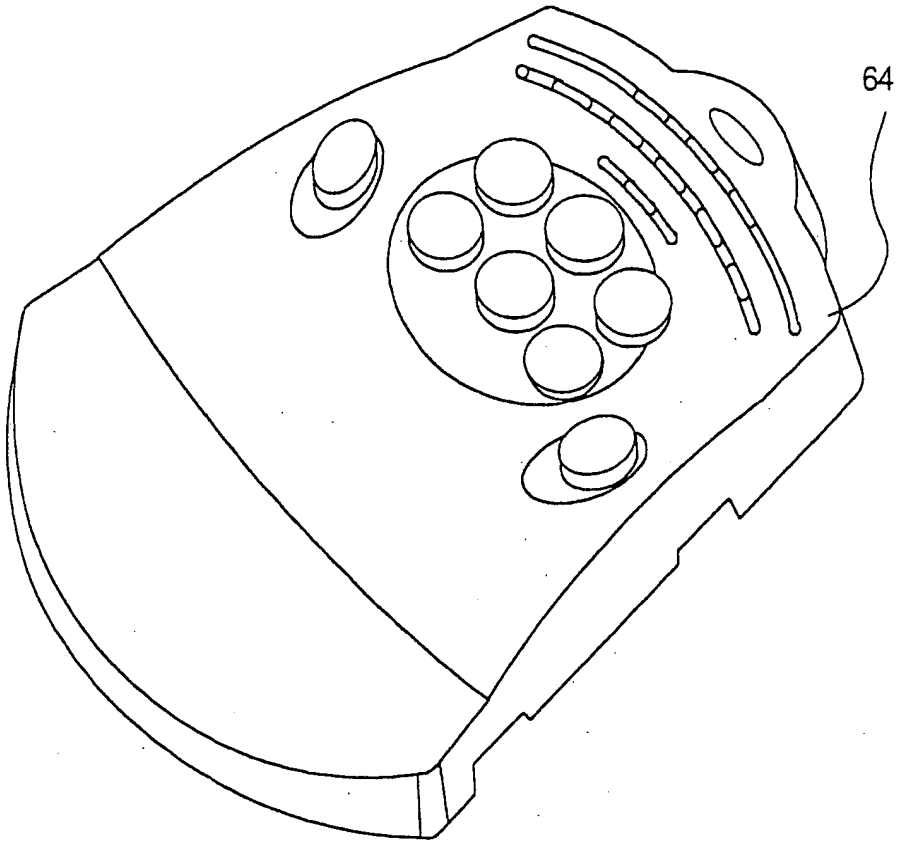



FIG. 12

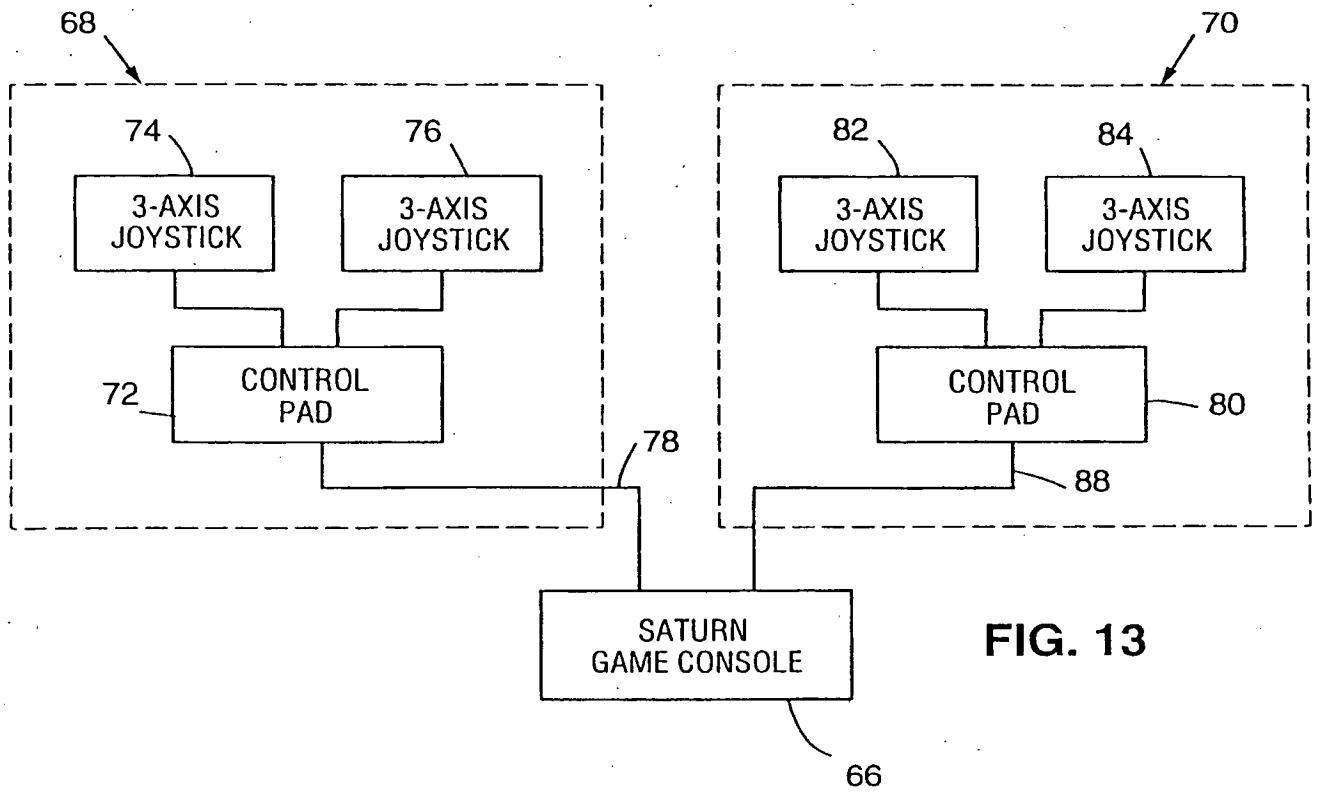

68
70
74
76
82
84
3-AXIS JOYSTICK
3-AXIS JOYSTICK
3-AXIS JOYSTICK
3-AXIS JOYSTICK
72
CONTROL PAD
CONTROL PAD
80
78
88
SATURN GAME CONSOLE
66

FIG. 13

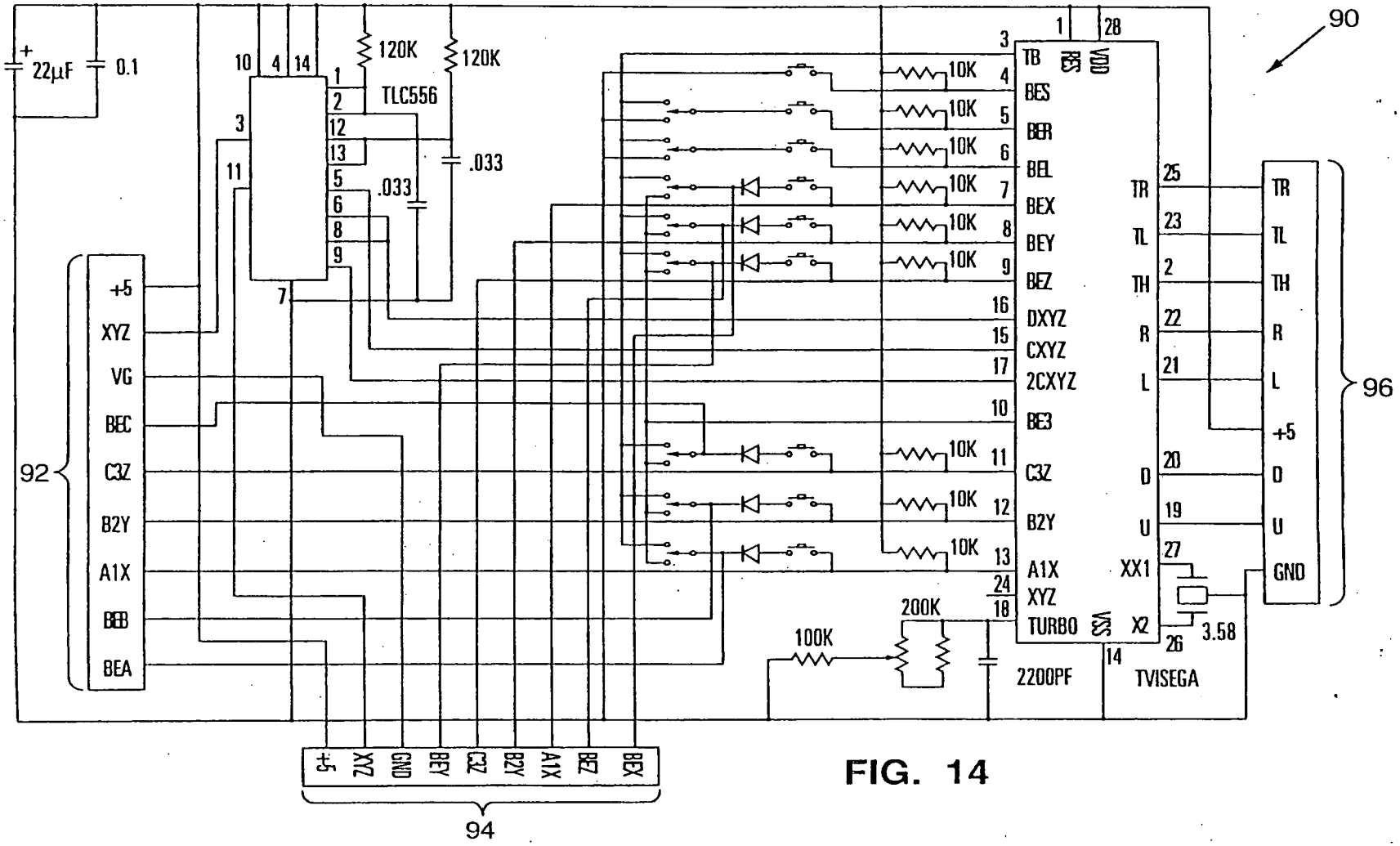

90
22µF
0.1
120K
120K
TLC556
.033
.033
10K
10K
10K
10K
10K
10K
10K
10K
10K
+5
XYZ
VG
BEC
C3Z
B2Y
A1X
BBB
BEA
92
BES
BER
BEL
BEX
BEY
BEZ
DXYZ
CXYZ
2CXYZ
BE3
C3Z
B2Y
A1X
XYZ
TURBO
TB
VDD
VSS
TR
TL
TH
R
L
D
U
XX1
X2
TR
TL
TH
R
L
+5
D
U
GND
96
100K
200K
2200PF
3.58
TVISEGA
+5
XYZ
GND
BEY
C3Z
B2Y
A1X
BEZ
BEX
94

FIG. 14